LIBRARY
STATE PLANT BOARD
JAN 10 '40

UNITED STATES
DEPARTMENT OF AGRICULTURE

BUREAU OF
ENTOMOLOGY AND PLANT QUARANTINE
NEWS LETTER

VOLUME VII

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
NEWS LETTER
FOR NOVEMBER 1939

VOL. VII, No. 1 (Not for publication) January 1, 1940

ADMINISTRATION

WHITE, CHAIRMAN OF EASTERN BRANCH, A. A. E. E.

W. H. White, head of the Division of Truck Crop and Garden Insect Investigations, was made chairman of the Eastern Branch of the American Association of Economic Entomologists, at the annual meeting held in New York City on November 16 and 17.

FRUIT INSECT INVESTIGATIONS

Ethylene dichloride emulsion for control of peach borer.--Oliver I. Snapp, Fort Valley, Ga., reports that a peach grower who operates on a large scale used 6,000 gallons of ethylene dichloride emulsion prepared on the farm. He obtained 100 percent kill of the borers, with savings of 25 percent for materials and 80 percent for labor, as compared with the cost of paradichlorobenzene treatment which he used theretofore.

Importance of color of Japanese beetle trap.--A recent report submitted by W. E. Fleming, E. D. Burgess, and W. W. Maines, of the Japanese beetle laboratory, Moorestown, N. J., on the relation of color to the effectiveness of Japanese beetle traps may be summarized as follows: In an investigation conducted during the summer of 1939, traps painted entirely yellow were found to be definitely superior in effectiveness to those painted aluminum, white, light yellow, light blue, dark blue, pink, red, orange, reddish orange, and shades of green ranging from light to dark and from yellowish to bluish. The evidence this season showed that a scouting trap painted with a yellow to which no other pigment was added captured 50.8 percent more beetles than did the green and white standard trap used extensively in recent years. The addition of yellow to other pigments always enhanced their effectiveness. It follows logically that to obtain the greatest capture of the beetles attracted the trap should be painted with a primary yellow. It was demonstrated conclusively that a trap painted green and white is more effective than a green trap in capturing the Japanese beetles attracted to it. It was found, however, that when the baffle and the inside of the funnel of a green trap were painted white, the trap functioned as a white trap; when these parts of a white trap were painted green, the trap performed as a green trap. The shade of green on the outside of the funnel and on the beetle receptacle was a minor factor. As the color of the baffle and the inside of the funnel govern the effectiveness of the trap, there seems to be no necessity for using a dual color scheme on the trap.

Distribution and abundance of Japanese beetle in area of general distribution.--The following summary of the distribution and abundance of the Japanese beetle in the area of general distribution in 1939 has been prepared by T. N. Dobbins, of the Japanese beetle laboratory at Moorestown. The 1938-39 brood of Japanese beetles was characterized by a consistent retarded development in each of the stages. Following an unusually late development of larvae in the fall of 1938, a higher than normal percentage of larvae entered hibernation as second instars. A somewhat wet, cool spring appears to have further retarded development so that general emergence of adult beetles in 1939 was from 10 days to 2 weeks later than normal. At the close of the 1939 beetle season the area of general distribution was estimated to occupy approximately 16,300 square miles, an increase of 1,183 square miles over that of the previous year. This area was distributed among the various States as follows: Connecticut, 286 square miles; New York, 1,141; New Jersey, 7,250; Pennsylvania, 5,013; Maryland, 1,546; Delaware, 1,064. The regional concentration of beetles varied markedly throughout the area of general distribution. As has been the case for the past several years, the infestation was most severe in northern Delaware, northeastern Maryland, and extreme southeastern Pennsylvania. Within this area the infestation, generally speaking, was of about the same severity as that observed in 1938, with heavy foliage injury advancing from 1 to 5 miles beyond points observed the preceding year. Throughout the remainder of the area of general distribution, the infestation was somewhat spotty, as compared with 1938, the infestation in many areas appearing to be heavier than in 1938, while in others it was lighter. On Staten Island and in most of the New York metropolitan area the infestation was not as heavy as the previous year, while north of the city and throughout Connecticut there appeared to be a decided increase. For the first time in several years an increase was observed in the oldest infested area in the vicinity of Moorestown, N. J. A survey of a number of secondary centers of dispersal situated on the Eastern Shores of Maryland and Virginia revealed that a considerable amount of dispersal had taken place. The largest area generally infested involved approximately 415 square miles in Somerset and Worcester Counties, Md., and Accomac County, Va.

Relation of raisin moth to grape spoilage.--Extensive decay of grapes in 1938, accompanied by infestation, led to an investigation of the trouble during the present year. Losses were less severe in 1939, but information was obtained about the relative importance of the raisin moth (Ephestia figulilella Greg.) and other factors. As a part of the work, George H. Kaloostian, of the Fresno, Calif., laboratory, examined damaged bunches of several varieties in 7 vineyards in Tulare and Fresno Counties. The primary causes of injury of 958 damaged bunches were recorded as follows: Crushing caused by pressure of other berries, trellis wire, and leaf petioles, and cracking caused by turgor, 51 percent; insects, 22 percent; and damage by birds, 27 percent. The injuries found (as distinct from primary causes) were:

Rot alone, 49 percent; rot, Drosophila, with or without nitidulid beetles, 33 percent; rot and raisin moth larvae, 14 percent; raisin moth larvae alone, 4 percent. Various types of decay; following exposure of pulp by crushing, cracking, and the work of insects and birds, were found in 96 percent of the damaged bunches. Tentative conclusions are that crushing and cracking of the fruit, brought about by cultural practices designed to produce large-size raisins for fresh shipment, caused the greater part of the spoilage in 1939.

MEXICAN FRUITFLY CONTROL

Fruitflies scarce in lower Rio Grande Valley.--Trapping results indicate that the population of Anastrepha ludens Loew in the Rio Grande Valley was very low during November. From 35,370 trap operations, only 1 specimen was recovered and this fly was taken in the early days of the month. Intensive inspection of groves failed to reveal any fruit infested with larvae of A. ludens. Movement of fruit from the regulated area has exceeded all previous records for the same period.

CEREAL AND FORAGE INSECT INVESTIGATIONS

Parasitization of European corn borer in Massachusetts and Connecticut.--C. A. Clark, Moorestown, N. J., reports as follows on field-status studies of parasites on the first generation of the European corn borer in parts of Bristol and Plymouth Counties, Mass., and in a part of Hartford County, Conn.: "The area covered in this survey totals approximately 530 square miles. Four exotic parasites, Inareolata punctoria Roman, Lydella grisescens R. D., Macrocentrus gifuensis Ashm., and Chelonus annulipes Wesm., were reared from the total of 4,738 specimens of the corn borer. The first 2 species were reared from the collections made in central Connecticut and all 4 were obtained from specimens taken in southeastern Massachusetts. The average parasitization by all species in the Massachusetts locality totaled 26.1 percent and in the Connecticut locality 37.6 percent. In southeastern Massachusetts the highest parasitization by M. gifuensis in any collection was 46.4 percent and the average 12.1 percent; by I. punctoria the highest was 30.1 percent and the average 6.3 percent; for L. grisescens in the same locality the highest recorded parasitization of the borer was 44.3 percent and the average 6.0 percent; while for C. annulipes the highest was 12.2 percent and the average 1.4 percent. In central Connecticut the highest parasitization on the summer generation of the borer in 1939 by I. punctoria was 72.1 percent and the average 36.0 percent. For L. grisescens in this locality the highest parasitization of the borer encountered in this survey was 5.6 percent with an average of 1.2 percent. Very small numbers of the native parasites Bassus agilis Cresson and Labrorychus prismaticus Nort. were recovered."

Resistance of sweet corn to the European corn borer.--Morris Schlosberg, Toledo, Ohio, has summarized the data relating to studies of sweet corn resistance to the European corn borer, which have been in progress near Toledo, Ohio, from 1935 to 1939, with inbred strains supplied by the Bureau of Plant Industry and various State agricultural experiment stations. During the 5-year period a total of 690 entries, comprising 451 Bantam, 134

Country Gentleman, and 105 Evergreen lines, were tested in 3-fold replication, using the method of random blocks. In each year the entries were uniformly hand-infested with egg masses and the surviving larval progenies determined by dissecting the plants. The expected larval populations for the conditions of test among the strains were determined by multiple regression methods, taking into account the effects of seasonal growth requirements and rates of natural infestation. The strains were then appraised on the basis of the differences shown between their observed and predicted larval populations, expressed as percentages of the predicted values. Decreases from the predicted levels of larval populations were considered to indicate possible resistance, and increases were regarded as indicating possible susceptibility to survival of the larvae, when their magnitudes exceeded at least once the standard error of estimate associated with random variability. The possibly resistant selections were retested in succeeding years, as the results of any single season were considered inconclusive. Among the strains tested for 3 years or more, the following show possibilities of possessing inherent resistance to the survival of the larvae, as their observed levels of larval populations were found to be consistently lower than those expected for their conditions of test: The Bantam strains Michigan 1828, Iowa 9, Minnesota 26-34, Iowa 45, Minnesota 13-34, Purdue 14, and Michigan 1823; the Country Gentleman strains Iowa 1434, Purdue FR22(4) 1, Purdue 8035(6)1, Iowa 1445, Purdue S36(5)1, Purdue S10(5)1, Purdue 7620(8)1, and Purdue 6691(9)1; and the Evergreen strains Maryland H126, H33, Iowa 1071, Purdue 119, Purdue 1101, Purdue 1014, Iowa 1248, and Illinois 13. The most favorable indications of resistance were shown by the Bantam selections and the least promising by the Evergreen selections. None of the strains tested was found to be immune to borer establishment, but the evidence of supplementary tests permits the conclusion that the Bantam strain Michigan 1828 is inherently relatively resistant to the survival of larvae of the European corn borer.

Fall brood of grasshopper in Yuma County, Ariz.--O. L. Barnes, Tempe, Ariz., reports that while making a grasshopper-egg survey on November 10 in a large alfalfa field at Blalack, in the south Gila Valley a few miles east of Yuma, it was observed that nymphs of *Melanoplus differentialis* Thos. in the intermediate and late instars made up the bulk of the living grasshopper population. No living adults of that species were seen or swept, but a few dead adults of the spring brood were observed scattered about over the ground. The field was again visited on November 22 and the *M. differentialis* population was estimated at 6 hoppers per square yard over a 40-acre portion of the above field, ranging from 3 to 15 per square yard in different places. A very few, less than 1 percent of the population, were recently molted adults. The nymphs were in instars 2 to 5, chiefly 3 to 5. Both adults and nymphs of the fall-appearing brood were from slightly to considerably smaller than those of the spring-appearing brood in the same vicinity. It seems probable that this represents a second generation.

JAPANESE BEETLE CONTROL

Finding of egg clusters revokes nursery permit.--Inspection of nursery stock at one of the nurseries in the Middletown, Conn., area resulted in the finding of two gypsy moth egg clusters. Prior to this fall, this establishment with those in the immediate neighborhood had been under permit, which allowed them to ship all of their stock under certification. When egg clusters were found on an adjacent nursery, all nursery permits in that section were suspended.

Christmas tree infestation.--One gypsy moth egg cluster was found on a Christmas tree in a carlot shipment of trees inspected at Harmony, Maine, for shipment to York, Pa. The infested tree was removed from the shipment.

Cordwood brushed to remove infestation.--A cord of gray birch wood inspected at Dixfield, Maine, was so heavily infested with gypsy moth egg clusters that it was impracticable to endeavor to creosote and remove each individual egg cluster. A stiff-bristled brush was obtained and the entire surface of each 4-foot log was brushed. Approximately 350 egg masses were removed in this manner. At Danvers, Mass., 24 egg masses were taken from 8 cords of wood similar to the above logs. These logs were later manufactured into novelties and shipped to noninfested territory.

Record lumber shipments.--Shipments of lumber from the Rochester, N. H., district exceeded the previous all-time high established in October 1939. Inspections and certifications in November included approximately 1,361,800 board feet. Among infestations removed from this material were 19 egg clusters from material inspected at Conway, 4 from material inspected at Campton, and 3 from material inspected at Rochester. A 50-percent increase in shipments of pulpwood and lumber was reported from the White River Junction, Vt., district.

Evergreen boughs yield egg clusters.--In the course of the bulk inspection of 12 tons of evergreen boughs at Rowley, Mass., 197 egg clusters were removed. This evergreen material was intended for manufacture into Christmas wreaths for shipment from the infested zone. At Barnstead, N. H., 10 egg clusters were removed from 7½ tons of fir balsam boughs. Another egg mass was removed during the inspection of a ton of evergreen boughs inspected at Putney, Vt.

Greater demand for laurel inspection.--An increase in applications for the inspection of woodland area from which various collectors obtain their laurel supply was reported from a number of New England districts. One of the lots at Southampton, Mass., disclosed infestation and the collector was informed that laurel from this plot would not be eligible for certification. Field inspection of the laurel lots permits certification of all material gathered from uninfested premises.

Egg mass on pine cone.--At Providence, R. I., 1 egg mass was found in a bulk shipment of 1,500 pine cones that were to be used in decorating baskets for shipment to points outside the gypsy moth infested area.

Leak detectors to be furnished each field office.--Halide leak detectors are being provided to each district and suboffice for use in checking possible leaks in methyl bromide fumigation chambers. Check-ups are made constantly by the treating section of the Division, testing for possible leaks in chambers now in use. The number of plants fumigated with methyl bromide during November was slightly under the October total, 80,018 plants having been fumigated in November, bringing the grand total for the year to 589,242 plants.

Cooperative soil-treating program continued.--Soil temperatures held up sufficiently during November to permit lead arsenate applications to 209.5 acres for the control of isolated Japanese beetle infestations in 2 cities each in Indiana and Michigan, 1 in New York, and 10 in North Carolina. Indiana treatments included 49.7 acres covered in Indianapolis and 13.2 acres treated in Logansport. Twelve acres were treated in Detroit, and 0.8 acre in Dearborn, Mich. In Dansville, N. Y., 19.3 acres in the residential section were treated from November 2 to 14, inclusive. Soil treatments during November in North Carolina were as follows: Charlotte 12.9 acres, Durham 8.7, East Spencer 25.2, Goldsboro 5.1, Greensboro 4.7, High Point 13.1, Raleigh 4.8, Spencer 12 acres, Wilson 0.9 acre, and Winston-Salem 27.1 acres. These treatments were all cooperative projects.

Partially deafened by Japanese beetle.--A newspaper article appearing in a recent issue of the Baltimore Sunday Sun stated that Dr. Max Kimbrig of Huntington, N. Y., had reported to the American Medical Association that a Japanese beetle had devoured most of the ear drum of a patient that came under the doctor's observation.

Fumigatorium for rent.--One of the southern New Jersey nurserymen who has equipped himself with a methyl bromide fumigation chamber has been renting the chamber for use by other growers who are not so equipped. This has proved a very satisfactory arrangement for growers in that vicinity, and has provided an outlet for stock that otherwise would not have been eligible for certification.

Baltimore trapping results.--According to a report published in the Baltimore Evening Sun of October 25, 20 barrels, or approximately 12,000,000, Japanese beetles were captured in that city during the last season. The report stated that quite a number of traps had been stolen or broken. Included in the article were instructions for the lead arsenate treatment of lawns to prevent grub injury.

Hibernating larva in peony-root cavity.--In the course of individual inspection of 10,000 peony roots for a grower at Berlin, Md., an inspector found a Japanese beetle grub hibernating in one of the crown cavities. The entrance to the cavity was covered with a small amount of soil. Inspection of these roots required considerable time due to the many cavities in each washed root.

Crews cooperate in control of stock diseases.--As a sanitary measure, all crews working on livestock farms or on poultry ranches sterilize their shoes or boots. Several owners who have protested against eradication and sanitation crews working on their properties have been very cooperative since they learned that the men take precautions to protect livestock against infectious diseases. Instructions to crew members direct that they are not to approach within 100 feet of barns, barnyards, or other places where livestock is kept. Before entering pastures or other portions of the property the men use sponges or cloths to wash their footwear with a solution made of 4 ounces of liquid saponified cresol solution to a gallon of water.

One first-record infection.--A first-record report was received during the first week in November confirming the presence of Dutch elm disease infection in an elm located in the town of Oxford, New Haven County, Conn. The sample from which the fungus was cultured was a recollection from a two-leader tree of 1 inch and 1½ inches diameters in a supposedly Cephalosporium-infected section within the working radius from another infection in this locality. Intensive scouting and sampling within a 500-foot radius of previously determined infections in the town of Woodbury, Litchfield County, Conn., turned up another infected elm. The confirmed tree was almost completely dominated by two larger elms growing on either side 4 feet and 10 feet distant. Discoloration characteristic of the Dutch elm disease fungus was found only in one of the lower side branches of the smaller tree.

Crew destroys elms removed in road widening.--One crew was assigned for part of November to destroy elm trees removed by a contractor engaged in widening State Route No. 100 through Elmsford, Westchester County, N. Y. Approximately 50 elms ranging from 10 to 35 inches in diameter were removed. On rainy days the wood was burned on the site. The remainder of the wood was hauled to a burning site 1 mile distant. These trees were in a section where confirmed trees had been found in the past, so that elm woodpiles in that vicinity would have contributed to a build-up in the elm bark beetle population and a possible recurrence of the disease.

FOREST INSECT INVESTIGATIONS

Peeling method of mountain pine beetle control in sugar pine tested.--G. R. Struble, Berkeley, Calif., reports that in three tests conducted near the Miami field base, located on the Sierra National Forest, Calif., to determine the efficiency of this method of summer control where shade prevents sun-curing, the results were all identical and showed that the method was highly effective against all stages of larvae, pupae, and early callow adults.

Heavy populations of western pine beetle in 1939.--Mr. Struble also reports that adults of Dendroctonus brevicomis Lec., numbering 6,685, emerged from 50 square feet of ponderosa pine taken from a large tree located near the Grizzly Giant in Mariposa Big Tree Grove, Yosemite National Park, Calif. The infested bark was placed in a rearing cage at the Miami field base, on July 22. Emergence of adults started on August 2 and was completed August 16, with an average of 134 beetles per square foot. High populations such as this are indicative of aggressive activity.

Extensive range of fall webworm in California.--J. E. Patterson, Berkeley, reports that during the summer and early fall periods of the 1939 season, the fall webworm developed to epidemic proportions over an extensive range in northern California. The range of its occurrence extended from the middle fork of the Yuba River north through the Sierra and Cascade ranges to the Siskiyou Mountains on the California-Oregon State line, and south from this point through the Coast Range to Mt. St. Helena. In general its occurrence was confined to the range of its principal host, madrona (*Arbutus menziesii* Pursh.).

Oystershell scale active on Sierra National Forest.--According to Mr. Struble, unusually heavy damage by this scale was noted in the vicinity of Fish Camp, Calif., in August 1939. The damage was confined to willow, deerbrush, and snowbrush, where extensive killing resulted on brush-covered hillsides northwest and east of Fish Camp.

Mountain pine beetle suffers high mortality.--W. D. Bedard, Coeur d'Alene, Idaho, reports that during the development of the mountain pine beetle from egg through the young adult stage it suffers an average normal mortality of slightly more than 90 percent. This mortality, which is the average to be expected in all broods of this insect, was determined from an intensive examination of 254 infested white pine trees studied during 4 seasons from 1936 to 1939, inclusive. In addition to the mortality during development, the new adult beetles suffer an additional flight mortality from the time they emerge until they have made attacks and are ready to lay eggs, thus resulting in a possible total mortality of something over 95 percent for the complete generation. Although both physical and biological factors may account at times for nearly all this mortality, much of it at other times results from the attack of parasitic and predaceous insects and mites. Mites are particularly active in destroying eggs and tiny larvae. A braconid parasite, *Coeloides dendroctoni* Cush., and 2 chalcids, *Cecidostiba dendroctoni* Ashm. and *Pachyceras eccoptogastri* Ratz., attack the larvae. The larvae of 2 predaceous flies, *Medetera aldrichii* Wh. and *Lonchaea viridana* Meig., as well as the larvae of 3 clerid beetles are active in destroying larvae, pupae, and new adults of the mountain pine beetle.

Beetles and blow-down.--According to Dwight A. Hester, Fort Collins, Colo., the Black Hills beetle control project on the Powell National Forest in Utah is being complicated by a blow-down. Last June a severe wind uprooted many trees on the East Fork drainage of the Forest. The roots of most of these trees were in sufficient contact with the soil to keep the foliage in a half-living condition during the summer. When the beetle flight occurred large numbers of the down trees were infested, especially on the under side. The broods in these trees are very heavy and further developed than they are in the standing trees. Nearly all were in the pupal stage when the area was examined late in November. Where the blow-down is heavy enough to form a windfall several trees deep, treating has been very difficult. In many places a number of Douglas fir and noninfested trees must be bucked into lengths and removed before the infested trees can be treated.

Status of European spruce sawfly in United States.--According to P. B. Dowden, New Haven, Conn., the entire spruce area of New England and New York is, in general, lightly infested with the European spruce sawfly, although there are several local areas of very heavy feeding. During 1939 there has been little change in the intensity of the infestation over the general area, but some of the heavy local infestations have increased considerably. H. B. Pierson reports an increase in the intensity of the infestations in the northern and eastern parts of Maine. In the southern part of New Hampshire the severely affected area increased in a wide circle around

Dublin, where it was first observed. About 100 square miles became heavily infested, but feeding was greatly reduced in stands which previously were heavily attacked. The same conditions took place in southern Vermont near Wilmington. The heavily infested area now includes between 50 and 100 square miles, but trees heavily attacked in 1937 and 1938 were not seriously fed upon in 1939. In central Vermont near Lincoln the whole infestation has decreased noticeably. In New York conditions are about the same as in 1938 with the sawfly generally present but nowhere in epidemic proportions. Observations made in 1939 seemed to indicate several reasons for the increase of the sawfly on the periphery of the heavy infestations and a reduction at their centers in the southern part of New Hampshire and Vermont. There was such a tremendous larval population in the center of the heavy infestations in these areas that suitable larval food was exhausted comparatively early in the season and severe mortality occurred. The progeny from larvae which did complete development found even less favorable food and mortality was often almost complete. Accompanying this lack of suitable food was the prevalence of disease which took not only an enormous toll where larvae were abundant, but also killed a high percentage of larvae in the older infestations where the larval population was low. On the periphery of the heavy infestation, although disease was prevalent, the abundance of food apparently insured the development of large numbers of larvae to the hibernating stage. Very few trees have been killed by the sawfly in southern New Hampshire, but the 1939 feeding included large numbers of "scattered spruce," i.e., trees growing among hardwoods. In general, these trees were more seriously defoliated than trees growing in spruce stands, and probably many will die. In southern Vermont there has been more mortality among trees heavily fed upon in 1937 and 1938, particularly on the edges of infested stands. The percentage of killed trees has nevertheless been very low. Most of the severely affected trees in this area grow in small but solid spruce stands. Enough foliage has apparently been left in the crowns to insure the survival of most of the trees if they are not severely attacked again in the immediate future.

Concentrated spray effective against white pine weevil and Pales weevil.--S. F. Potts, New Haven, reports that concentrated spray applications effected nearly 100-percent control of these weevils at a cost of about $2.50 per acre for the white pine weevil and $1.50 per acre for the Pales weevil. Lead arsenate and cryolite were the most effective insecticides tested. About 5 pounds of insecticide per acre is required for the white pine weevil and 1 pound for the Pales weevil. Conventional spray methods are ineffective and too expensive. The equipment used for the application of the concentrates was very inexpensive and a minimum of labor was required.

A parasite recovery of interest.--J. V. Schaffner, Jr., of New Haven, reports that on November 3, 1938, T. J. Parr made a collection of cocoons of the larch sawfly (Lygaeonematus erichsonii (Htg.)) in larch plantations at Mount Union, Pa., where severe defoliation occurred the previous summer. In June and July 1939 six parasites emerged from these cocoons in the laboratory. Five of the specimens have been identified at the National Museum as Mesoleius tenthredinidis Morley[1], a European species. This parasite was first introduced into Canada in 1912. As far as is known only two small colonies of this species have been liberated in the eastern part of the United States. These were received from the Canadian Parasite Laboratory in 1929 and 1931, and were liberated in New Hampshire and Massachusetts. This species has been extensively liberated in Canada and has been reared at New Haven from cocoons collected in Montana, Minnesota, Wisconsin, and Michigan. The parasite may have spread from the bordering provinces of Canada or it may have been in this country as long as the host. The discovery of the parasite in Pennsylvania, hundreds of miles from the nearest point of liberation, supports the latter idea.

Low gypsy moth populations in ecological plots.--Henry A. Bess, New Haven, reports that studies on the annual population density of the gypsy moth in 3 experimental areas where no artificial control measures are applied show that the population of the insect has either decreased to a low density or remained in a somewhat static condition at a low population level for the last 3 or 4 years. These 3 study areas represent a total of from 1,300 to 1,400 acres of infested woodland in Massachusetts and Connecticut. Cruise lines are run through these areas in the fall of each year and a measure of the population density secured by counting the egg clusters present in sample plots, 100 square feet in area, taken at regular intervals on the cruise lines. In the study area on the Natchaug State Forest, Eastford, Conn., the insect has been exceedingly scarce for the last 4 years. The infestation in the 1,000-acre study area has been so low during this period that no egg clusters have been found in the hundreds of sample plots examined. However, in traversing the cruise lines a special effort was made to find egg clusters and so far, a total of from 2 to 17 egg clusters have been found each year. The numbers of egg clusters found by this method were as follows: 4 in 1936, 17 in 1937, 2 in 1938, and 3 in 1939. The insect was abundant in about one-third of the 300-acre study area on the Freetown State Forest, Freetown, Mass., in the fall of 1937, hundreds of egg clusters being present per acre. However, comparatively little defoliation occurred in this area in the spring and summer of 1938. The population was reduced to a point where egg clusters were difficult to find in the fall of 1938, with only a half dozen occurring in over 100 sample plots. This fall the population is still lower. A 250-acre study area was set aside on the Harvard Forest, Petersham, Mass., during the winter of 1936-37 and population studies were made in the area until the fall of 1938, when it was abandoned because of hurricane damage to the woodland. In the fall of 1936 this area contained a fairly heavy population of the insect in a number of "pockets" where a dozen or more egg clusters might be found on individual trees. In the spring and summer of 1937 a number of trees were defoliated in these heavily populated "pockets." That fall the population was lower than the year before but egg clusters were common throughout the area and there was 1 heavy "pocket" of about ½ acre in size where egg clusters were abundant. There was no noticeable defoliation in the area in the spring and summer of 1938 and egg clusters were scarce that fall. After the hurricane in September 1938 the above study area was abandoned and similar studies started in an adjacent infested woodland of about 60 acres. This area was well populated with egg clusters in the fall of 1938, there being approximately 500 per acre. There was no noticeable defoliation in the area in the spring and summer of 1939 and only 3 egg clusters were found in about 400 sample plots this fall.

---

[1] Some forest entomologists are of the opinion that the larch sawfly is circumpolar and has been with us always. The widespread occurrence of Mesoleius might be considered further proof of this. Other evidence is the defoliation effects recorded in tree rings as long as 100 years ago in the Lake States, which may have been caused by this sawfly.

Notes on development of smaller European elm bark beetle.--T. H. Jones, Morristown, N. J., reports that elm trees which were cut in New Jersey on August 8, August 22, and September 6, 1938, were left in the field until October 4, when the stems were sawed into sections and brought to the Morristown, N. J., laboratory. On December 14 the sections were divided into comparative lots and placed in four locations--the basement of the laboratory building, on the ground in the laboratory yard, on a rack in the laboratory yard, and in a room in an unheated laboratory garage. On April 27, 1939, the logs were placed in metal drums in the four locations. The drums had holes in their sides to which glass bottles were attached into which beetles could emerge and from which they could be removed and counted daily. Large numbers of the smaller European elm bark beetle (Scolytus multistriatus Marsh.) issued during the spring and summer. Attack by this species undoubtedly began immediately after the trees were cut. When it was believed that emergence was completed the logs were debarked and all egg galleries of the species counted and measured. The main conclusions to be drawn from the experiment are as follows: (1) Logs from trees cut September 6 gave much poorer emergence per unit length of egg gallery than logs from trees cut on August 8 or August 22; (2) logs stored in the garage gave better issuance per unit length of egg gallery than did those stored in the other locations in the August 8 and August 22 cuttings; (3) beetle emergence began on May 13, May 31, and June 2 in the basement, yard, and garage, respectively; (4) except in the basement, the bulk of emergence occurred slightly earlier from the August 8 cutting than from the August 22 cutting; (5) under all conditions of storage, emergence from the September 6 cutting began later than it did from the earlier cuttings.

GYPSY MOTH AND BROWN-TAIL MOTH CONTROL

Gypsy moth crews work in open country during hunting seasons.--As is customary at this time of year, the supervisors of the various districts where gypsy moth work is performed planned their work so that the crews would perform their duties in open country or in residential sections during the hunting seasons. Although the open seasons on deer are of brief duration, they occur at different times in the various States, extending from the middle of November, when the season opened in Vermont, to the first part of December. The removal of the workers from the forest eliminates, as far as possible, the danger of injury to crew members by stray bullets when the hunters are in the woods. This annual precaution is made necessary by the carelessness exhibited by many of the deer hunters, some of whom use high-powered rifles. The men in Vermont made slow progress at first under the changed conditions, as practically all of them had been engaged on woodland work only, but they soon became adapted to work in open country. An open season of 4 days was declared on bear in Pennsylvania, beginning November 15, but no appreciable modification of work was necessary, as few crews engaged in gypsy moth work were operating in areas frequented by these animals. Workers were not withdrawn from the woodlands during the open seasons on small game, but supervisors and foremen were constantly on the alert for hunters, who were warned that men were working in the vicinity.

No gypsy moth infestation found at two assembling cage sites in Vermont.--Close scouting work was completed in a circular area 1/2 mile in radius around an assembling cage site in the township of Johnson, Lamoile County, Vt., where a male gypsy moth was recovered last summer, but no indication of existing infestation was found. Similar work was also completed in an area of equal size around an assembling-cage location about 35 miles southwest of Johnson, in Hinesburgh, Chittenden County, where one male gypsy moth was captured during the period of flight, also with negative results. Both towns are situated in the northern portion of Vermont.

Small gypsy moth infestation found in Massachusetts near New York State line.--As a result of several weeks' scouting work conducted in a belt of heavily wooded forest land in the western part of Williamstown, Berkshire County, Mass., which borders Berlin Township, Rensselaer County, N. Y., a small gypsy moth infestation was found at a relatively high elevation close to the New York State line. Although it was not anticipated that scouting would be necessary in this area during the current fiscal year, the discovery of scattered small infestations by New York State forces in the eastern part of Berlin Township last month made advisable a modification in the plan of work to permit the examination of a strip of woodland in Massachusetts adjoining that scouted by the New York State force.

Quality of gypsy moth scouting work improves as the men gain experience.--Regular experienced employees detailed to checking and reinspection work in towns previously scouted by W. P. A. crews in Massachusetts reported that a decided improvement was observed in the quality of the work done this season, as compared to that of previous years since W. P. A. gypsy moth work was begun. Many of the men now carried on the pay roll have scouted a year or more, and the experience gained during that time is being reflected in their work.

Work resumed in section of gypsy moth colony infested with poison ivy.--Employees engaged in gypsy moth extermination work at an infestation in Southbury, New Haven County, Conn., resumed the cutting and assembling of brush and other waste wood, about the middle of November, in a section where work was temporarily discontinued several weeks ago on account of the large quantities of poison ivy and poison sumac which were in full foliage at that time, and which could not be readily handled without danger of poisoning the workers. There appears to be much less liability of poisoning from these plants during the winter months, but even then the workers were constantly warned against the careless handling of the brush and vines.

Several gypsy moth colonies near assembling cage sites offer no obstacles to eradication measures.--A number of gypsy moth infestations were discovered in Pennsylvania as a result of close scouting work conducted in the vicinity of locations where male moths were recovered at assembling cages during the past summer. Many of these colonies appeared to be confined to relatively small areas, and they should not be difficult to exterminate.

New agencies in Pennsylvania make creditable showing on gypsy moth work.--Reports from the gypsy moth supervisory personnel directing the work of National Youth Administration workers in Pennsylvania indicate that these young men, most of whom are under 25 years of age, are taking an increased interest in the work and, considering their limited experience, are making a creditable showing. They have already accomplished considerable valuable work by creosoting large numbers of gypsy moth egg clusters in the infested areas. The prospect of developing some efficient gypsy moth workers from this group appears promising, as many of the young men had previous training in C. C. C. camps and had become accustomed to outdoor work. Some progress was also made during November by the force of the State Department of Public Assistance, although the number of men actually employed on gypsy moth work was small.

C. C. C. gypsy moth work restricted to two areas during deer-hunting season.--The week ended November 25 was open for deer hunting in Vermont, and C. C. C. gypsy moth workers confined their activities to thinning work at two colonies. The areas where the men were working were well posted in order to warn hunters that C. C. C. enrollees were working in those vicinities.

Report of C. C. C. burlapping work.--The volume of burlapping work done last season was considerably less than that of the previous year because of the marked reduction in the number of men available for the work. Approximately 200,000 trees were burlapped in 15 towns and slightly more than 980,000 gypsy moth caterpillars and pupae were destroyed. Later inspections of the burlapped areas showed that conditions in these sections were greatly improved.

PLANT DISEASE CONTROL

Barberry eradication.--Stanley Castell, leader in charge of barberry eradication in Indiana, reports that during the period August 1 to October 31, a thorough survey was made of 1,290 square miles in 14 counties, with the result that 68,265 barberry bushes were destroyed on 31 new properties and 36 where bushes had previously been found. The following table summarizes this work by counties.

County	Area surveyed	New properties		Old properties		Total
		Cleared	Bushes killed	Inspected	Bushes killed	bushes destroyed
	Square miles	Number	Number	Number	Number	Number
Adams	84	3	53	14	0	53
Benton	57	1	2	0	0	2
Fountain	127	2	4	27	0	4
Hendricks	124	4	10	5	6	16
Henry	0	2	21	0	0	21
Jasper	408	7	25	14	0	25
Knox	13	0	0	0	0	0
Lake	0	2	3	2	7	10
Morgan	0	0	0	1	5	5
Parke	29	0	0	0	0	0
Pulaski	220	3	682	8	18	700
Tippecanoe	0	1	1	0	0	1
Warren	148	0	0	11	0	0
White	80	6	67,428	14	0	67,428
Total	1,290	31	68,229	96	36	68,265

Barberry bushes destroyed in Michigan, 1939.--F. B. Powers, leader in charge of barberry eradication in Michigan, summarizes progress in eradication during the period May to October 1939, as follows:

County	Area surveyed	New properties		Old properties		All properties	
		Cleared	Bushes destroyed	Cleared	Bushes destroyed	Cleared	Bushes destroyed
	Sq. mi.	Number	Number	Number	Number	Number	Number
Bay	38	0	0	0	0	0	0
Benzie	24	12	453	11	171	23	624
Clare	2	0	0	0	0	0	0
Clinton	0	2	1,655	0	0	2	1,655
Eaton	0	1	15	0	0	1	15
Grand Traverse	36	51	1,508	19	84	70	1,592
Hillsdale	152	13	31	5	152	18	183
Ingham	0	2	3	0	0	2	3
Isabella	69	8	43	0	0	8	43
Jackson	0	2	8	2	8,012	4	8,020
Kent	87	24	659	7	84	31	743
Leelanau	22	15	225	17	1,185	32	1,410
Mecosta	111	7	69	0	0	7	69
Saginaw	103	46	2,306	4	25	50	2,331
Tuscola	196	11	706	4	463	15	1,169
Total	840	194	7,681	69	10,176	263	17,857

Bushes were found on 194 new properties and on 69 where bushes had previously been found. Of the total number of bushes destroyed, only 476 had reached the fruiting stage.

Accomplishments in blister rust control.--Ribes-eradication work for the protection of valuable white pine stands has been discontinued for this year in most of the forest areas where this work has been in progress. During the active season, extending from May to November, very satisfactory progress was made on this project. The following table gives a preliminary report of the results accomplished by regions.

Region	Area worked[1]	Ribes pulled	Labor	Ribes destroyed per acre
	Acres	Number	Man-days	Number
Northeastern	680,403	13,472,709	177,411	20
North Central	371,789	17,095,656	85,931	46
Southern Appalachian	394,485	2,961,962	32,121	8
Western white pine (northeastern Wash., northern Idaho, northwest Montana)	105,064	28,255,561	156,123	269
Sugar pine (California and Oregon)	147,623	18,607,933	166,028	126
Total	1,699,364	80,393,821	617,614	--
Average	--	--	--	47

[1] These data include the areas initially cleared of *Ribes*, as well as those reworked.

Ribes owners in Delaware cooperate to protect white pine.--In 1 section of Newcastle County, Del., where blister rust control work was under way, 89 persons were found to have cultivated currants and gooseberries, and all but 19 voluntarily gave up their bushes and allowed the blister rust agent and his assistant to remove them. In 4 instances the cooperating owners took out their own bushes. Several of the 19 owners who retained their *Ribes* are commercial growers and have from 100 to 500 bushes. The pines being protected are largely ornamental, though there are several forest plantations in Newcastle County, the largest being on the Wilmington Watershed at Hoopes Reservoir. Wilmington has followed the lead of Baltimore in planting white pine in large quantities around their reservoirs. So far only one location of wild *Ribes* has been found in the State.

Blister rust notes from New England.--A. C. White, blister rust agent in Rhode Island, writes that a check-up in towns where the most damage was done to white pine timber by the hurricane of last fall, showed that seedlings of this species were coming in thickly on some of the affected areas. His observations indicate that the seeds are there and the more disturbance of the soil there is, the more seedlings make their appearance. There is also considerable young growth, ranging from 5 to 20 years old, growing on areas where trees were blown down. There have been 792,500 white pine planted in Rhode Island since the hurricane and an increase over this figure is expected next year. Through educational work, several property owners have become interested in white pine planting. One of the greatest losers from the hurricane, a property owner

LIBRARY
STATE PLANT BOARD

with an estate in the town of Coventry, who lost about 10,000,000 board feet of lumber, is planning to plant about 1,500 acres to white pine next spring. C. C. Perry, in charge of blister rust control work in Massachusetts, visited the salt-spray-damaged areas in the vicinity of Marion and Mattapoisett in November and found that the pines show a remarkable recovery from the damage they suffered last fall when they were "burned" by salt spray following the hurricane. All dead needles have fallen, therefore the browning aspect has completely disappeared. The crowns, however, appear sparse, owing to the fact that only the 1939 needles have persisted and these needles are, in general, rather stunted. There is some evidence of failure of adventitious buds, where trees are shaded. Buds for 1940 appear to be weak.

COTTON INSECT INVESTIGATIONS

Pink bollworm infestation in okra.--Because of the importance of okra as an alternate host plant of the pink bollworm in the lower Rio Grande Valley, studies were undertaken this season at Presidio, Tex., by S. L. Calhoun and O. T. Robertson to determine whether any varieties were immune or resistant to attack. Several thousand acres of okra are grown in the valley for shipment to outside areas during the winter months, and the finding of infestations in commercial shipments has made it necessary to place restrictions on the movement to noninfested areas. The presence of suitable pods for breeding during the season when no cotton is present also defeats the purpose of the cotton clean-up campaign to produce a host-free period. Seeds of 33 varieties or strains of foreign and domestic okra were obtained from Director Cooper, of the South Carolina Experiment Station, and from commercial seedsmen for planting at Presidio in the presence of a heavy pink bollworm infestation. Included in the collections were strains from Afghanistan, Turkey, Ceylon, India, and Mexico. The different strains varied greatly in the time required to produce pods, although all but 1 strain from Mexico produced pods before frost on October 30. All of the strains with fruit became infested and while there was considerable variation in the degree of infestation, there was such a wide variation in the dates of fruiting that no conclusions could be formed on the relative resistance, or whether any existed, of the different strains. It was noted, however, that certain strains contained very little watery fluid in the pods, whereas others were extremely watery. As a rule the strains with the least water showed the highest infestation, probably because of the heavier mortality among very small larvae in the strains with high water content. Seeds from selfed blooms of the different strains have been obtained for further testing next season. Tests were also conducted at Presidio to determine the age and size of okra pods that become infested with the pink bollworm, and whether immature larvae could complete development when the pods were cut and handled under conditions simulating commercial shipments. Newly hatched first-instar larvae were installed on pods from 1 to 7 days old and the pods removed from the plants after 6 hours. Moths were also confined with caged plants bearing pods of known ages and the pods removed daily after the first 4 days to allow for hatching. The pods of both series were kept at temperatures of 75° to 80° F. immediately after collection, and placed in a cold room at 40° for 2 to 4 days and then removed to a temperature of 75° to 80°. Pods from 1 to 7 days old became infested in both series of tests. Exposure to a temperature of 40° for a period of 4 days did not cause any additional mortality but merely arrested development of the larvae. Pods that were infested by placing newly hatched larvae on the pods showed the heaviest infestation (83 percent) with an average of 1.44 larvae per pod in pods 1 day old. The 7-day-old pods from the plants caged with the moths showed the heaviest infestation (73 percent) with an average of 1.27 larvae per pod. This was to be expected since the 7-day-old pods were exposed to attack over a longer period. Also 2 blooms were found to contain immature fourth-instar larvae in the cages, indicating that in the presence of a heavy pink bollworm population larvae will attack the flower buds of okra. Larvae and adults obtained from the pods 1 and 2 days old were very small, indicating that pods at this age did not contain sufficient food for development of normal-sized individuals. First-instar larvae placed on 3- to 6-day-old pods developed into normal moths, although the pods were collected from the plants about 6 hours after the larvae were installed. It was also noted that most of the larvae pupated in the pods, whereas in cotton most of the larvae leave the bolls before pupation. Some of the larvae had apparently gone into the resting stage within the pods. Measurements showed that pods 1 day after blooming averaged 0.56 inch; 2 days after blooming, 0.86 inch; 3 days after blooming, 1.42 inches; 4 days after blooming, 2.02 inches; 5 days after blooming, 2.58 inches; 6 days after blooming, 3.33 inches; and 7 days after blooming, 4.12 inches. Pods from 1-1/2 to 3 inches in length or from 3 to 5 days old are the most desirable for vegetable use but, since there was considerable variation in the size of pods at the different ages, a commercial shipment would most likely include some pods ranging in age from 2 to 7 days. Larvae in pods of this age and size can complete normal development after exposure to 40°, showing the danger of dissemination through commercial shipments of okra.

Host plants of the pink bollworm.--With the aid of several assistants, supplied by the Division of Pink Bollworm and Thurberia Weevil Control, L. C. Fife has been able to increase the number of inspections in the lower Rio Grande Valley to determine the distribution and importance of malvaceous plants as hosts of the pink bollworm. *Malvaviscus drummondii*, previously reported as a host, has been found to occur rather abundantly in waste places on both sides of the river. Although blooms and seed capsules were present, and although some of the plants were growing near infested cottonfields, no additional infestations in this species have been found. Very few seed capsules of *Hibiscus cardiophyllus* were found that were suitable for pink bollworm infestation, as most of them had opened and had shed their seed. This plant is known to be a host of the pink bollworm, but to date no infestations have been found in the limited number of seed pods examined. A considerable number of seed pods of several wild mallows, including *Abutilon* spp., *Wissadula* spp., *Malachra capitata*, *Sida angustifolia*, and *Hibiscus mutabilis* were examined during November without finding any pink bollworms. By the end of the month drought had seriously affected the growth and fruiting of the plants and very few were found in a suitable stage of growth for infestation. No new infestations were found in seven okra fields inspected during November, but a few pink bollworm larvae in all stages were found in the scattered squares and bolls of cotton present on both sides of the river.

PINK BOLLWORM AND THURBERIA WEEVIL CONTROL

Gin-trash inspection.--Intensive inspection of the trash from cotton as it is ginned is carried on annually at the most opportune time, in regard to the various areas to be inspected, to determine the status of pink bollworm infestation in counties regulated on account of the pink bollworm, and to discover possible incipient infestations in outside areas most likely to be infested. During November gin-trash inspection was concentrated principally in the Texas Panhandle area and in the cotton-growing sections of Arizona. No new infestations were found in the Panhandle area, but several additional specimens of the pink bollworm were found outside of the regulated area in Mitchell County, the first worm being found in that county in October. Inspection was completed in the Panhandle area around the latter part of the month, with a few specimens being taken from several counties already under regulation. Results of inspection carried on within the regulated area indicated a lighter infestation than for the 1938 crop season. During the latter half of November, after a considerable amount of inspection had been done, a recurrence of the pink bollworm was found in Arizona in the Salt River Valley at Glendale and Gilbert, this latter point constituting the heaviest infestation in that district for the 1938 crop season. A light infestation was also found to be present again this season in Pinal, Pima, and Graham Counties, Ariz.

Field clean-up in south Texas and the lower Rio Grande Valley of Mexico.--Field clean-up operations, which have been in progress in south Texas regulated areas for the last several months, were being brought to a close at the end of the period. This is the third clean-up for that area since the discovery of the pink bollworm in the Brownsville-Matamoros area of Texas and Mexico 4 years ago, in an effort to suppress this menace and prevent its spread to other cotton-growing sections. This year, for the first time, funds were made available by Congressional appropriation to pay in part for the destruction of stalks after harvest, and it is believed that a more thorough clean-up was done than has heretofore been possible. During November efforts were being concentrated on removing soca and abandoned cotton, most of which was being taken out by grubbing. The few fields which had been placed in a noncompliance status were also worked by the soca crews as they came to them. The supervisors spent a great portion of their time during the month in contacting operators in regard to the removal of seedling and sprout plants which had developed in fields after payment had been made, encouraging farmers to remove any such plants as might become a menace. Growers continued to cooperate in most instances in removing these stalks; however, a small number refused to do any more work, and in such cases the plants are removed with Bureau labor. Throughout November pink bollworm infestation continued to be found through random boll inspection in a number of fields of soca and abandoned cotton while these plants were being destroyed. The cooperative stalk-destruction work in the lower Rio Grande Valley of Mexico made good advancement during November. Stalks have been cut and plowed on practically all cotton acreage; however, as on the American side, continued contacts with growers are necessary in regard to stub cotton and seedlings which appear after plowing. Some fines were assessed in that area during the period.

Okra infestation in the lower Rio Grande Valley.--Systematic field inspection of okra continued to be made throughout November. For the period, 11 new infestations were found, bringing the total infested fields to 45. Most of the okra fields found to be infested are in Cameron County, only 7 having been found in Hidalgo County. Shipments of okra gradually increased throughout the month, and at the close of the period 83 permits had been issued for the shipment of okra, following inspection of fields showing negative results as to pink bollworm infestation.

Thurberia-plant eradication.--Thurberia-plant eradication work made good advancement in southeastern Arizona during November. The Tortillita Range is now being reviewed in order to locate any mature plants that might have been missed, or to take out such sprout plants or seedlings which may have occurred since this territory was first worked in 1935, at the inception of this project. The decision as to the necessity for removing these plants, as an additional safety measure to the control and quarantine measures already in practice, was reached when it was determined that this native boll weevil was making its way from wild plants to domestic cotton. This work has been carried on principally through Presidential allotments, using W. P. A. laborers. During November a considerable number of seedling and sprout plants were taken from the acreage rechecked.

Wild-cotton eradication in southern Florida.--A number of years ago it was discovered that wild cotton plants, which prevail along the southern coast of Florida, were infested with the pink bollworm, from which this pest was being disseminated to domestic cotton plantings in the Southeastern States. Consequently, an effort was begun to eliminate this wild cotton, which serves as a year-round host to the pink bollworm. A portion of the funds to carry on this work has been provided by W. P. A. allotments, and 12 W. P. A. crews were engaged in eradicating wild cotton plants during November. In addition, 2 crews, composed of Bureau employees, were placed in operation during the period. These last 2 crews carried on eradication work from houseboats, operating in the Ten Thousand Islands and in the Biscayne Bay and Florida Bay sections. First clean-ups for the season were completed during the month in Pinellas, Hillsborough, Sarasota, and Manatee Counties in the Bradenton subdistrict, and in the Keys subdistrict. During the first clean-up this season, 20,000 fewer wild cotton plants were found in the Keys subdistrict than during the first clean-up last season. However, there was an increase in the number of wild cotton plants found in the Bradenton subdistrict, and it is believed this is due to the fact that the wild cotton colonies in that area are, as a rule, small, and have been cleared of all vegetation, which has stimulated the germination of wild cotton seed. Most of the mainland locations were cleaned for the first time in the Fort Myers subdistrict, and the areas which it was necessary to reach by boat were in process of being cleaned at the end of the month. The C. C. C. camp being constructed by the Army at Cape Sable, to aid in this work, was practically completed at the close of the period.

TRUCK CROP AND GARDEN INSECT INVESTIGATIONS

Methyl bromide fumigation controls cyclamen mite.--In a series of fumigations performed by F. F. Smith, of the Beltsville, Md., laboratory, in cooperation with Randall Latta, of the Division of Control Investigations, it was shown that fumigations of cyclamen, delphinium, and snapdragon with methyl bromide killed the cyclamen mite (Tarsonemus pallidus

Banks) in all its stages without causing injury to the plants. On the basis of these tests it was concluded that a fumigation treatment of 2 pounds of methyl bromide per 1,000 cubic feet, with an exposure period of 3 hours at a temperature ranging between 60° and 70° F., constitutes the most practical treatment. It is planned, however, to continue these experiments in order to determine the possibility of obtaining an effective control at higher temperatures.

Parasites released to combat lima bean pod borer.--Rodney Cecil, of the Ventura, Calif., laboratory, reports that during last summer a total of 2,153 adults of Phanerotoma planifrons Nees. and 11,659 adults of Chelonus sp., both of which are imported species of parasites of the lima bean pod borer (Etiella zinckinella Treit.), were released in Santa Barbara, Ventura, and San Diego Counties, Calif. These releases were made in dense growths of the tree lupine (Lupinus arboreus Sims.), one of the favorite wild host plants of the lima bean pod borer, and in lima-bean fields. In addition to the parasites liberated in the field, a large number of each species was retained to serve as a foundation for future breeding operations.

Allyliothiocyanates or chloropicrin not superior to carbon disulfide as a soil fumigant for wireworms.--In recent experiments R. C. Lehman, of the Walla Walla, Wash., laboratory, found that neither allyliothiocyanate nor chloropicrin, used under field conditions, was as economical nor any more effective than carbon disulfide in killing wireworms in the soil, principally the sugar beet wireworm (Limonius californicus Mann.) and the Pacific coast wireworm (L. canus Lec.). Experiments with carbon disulfide showed that this material was very effective in killing wireworms in soil during the summer period when used at the rate of ½ ounce (pure or activated) at 1-foot intervals and 1 ounce at 1½-foot intervals. These dosages applied at 2-foot intervals, however, were not as effective as at the closer intervals in the silt-loam soils near Walla Walla.

Starchy grains superior to legumes for feeding wireworm larvae.--During the course of physiological studies, C. E. Woodworth, of the Walla Walla, Wash., laboratory, found that starchy grains, such as wheat and corn, were superior to proteinaceous legumes, such as peas and beans, in promoting the growth of larvae of the sugar beet wireworm and the Pacific coast wireworm. In these experiments the food provided was of three types: (1) Corn and wheat; (2) peas, Navy beans, and lima beans; and (3) living microorganisms consisting of dried brewer's yeast. In the first two of these groups the germ of the seeds was killed in certain lots and not killed in other lots, so that the latter might grow and supply succulent roots. The yeast was included in these dietary tests because several workers had shown that this material is an important dietary supplement and others have shown that humus such as might be produced by the dead yeast and the substrate material is a satisfactory food. Seeds, rather than the purified starches and crystallized proteins were selected because under natural conditions in the soil the molds are very common and the coats of the seed partially prevent their growth until the wireworms actively begin to feed upon the seeds. A lower wireworm mortality ensued from individuals that fed on the seeds where the germs were killed than from those that fed on seeds containing live germs. The grains were found to give better results from a nutritional standpoint than did the legumes.

Under the conditions of the experiment the wheat was found to be slightly superior to corn as a food for wireworms as the larvae that fed on wheat were larger, a greater percentage of them transformed to adults, and a higher percentage of the larvae survived. The peas were found to be superior to either Navy or lima beans as a wireworm food, the rate of growth of the larvae being greater and the percentage of survival at least closely comparable. Yeast was found to be of practically no value as a food for wireworms.

Flight of sweetpotato weevil adults.--K. L. Cockerham and O. T. Deen, of the Sunset, La., laboratory, report that recent observations have led to the recovery of adults of *Cylas formicarius* (L.) at distances ranging from ½ mile to 1¼ miles from the point of dispersal. During the progress of these experiments the adults that had been artificially colored were recovered at trap lights maintained for this purpose. Preliminary observations on the reaction of adults to different colored lights indicated that they exhibited a marked preference for the violet end of the spectrum, then for the blue, orange, red, yellow, and green, in the order named. During 1939 the adults were in active flight throughout the nocturnal period instead of during a short period following dusk, as had been observed during the course of flight experiments in preceding years.

Low acreage of Russian-thistle in San Joaquin Valley.--M. F. Bowen and W. C. Cook, of the Alhambra, Calif., laboratory, report that the annual survey to determine the acreage of Russian-thistle (*Salsola pestifer* A. Nels.) in the southern part of the San Joaquin Valley demonstrated that there was only about one-sixth of the acreage of this favorite wild host plant of the beet leafhopper (*Eutettix tenellus* (Bak.)) present during 1939, as compared to 1938. A total of 14,423 acres of this plant was mapped in the valley, comprising a stand density of 10 percent or over, as compared to 92,418 acres in 1938. The 1939 acreage of this plant is one of the lowest observed in the past 9 years.

INSECTS AFFECTING MAN AND ANIMALS

Effect on sand flies of flooding diked marshes with salt water.--J. B. Hull and S. E. Shields report that during the month of November the tide gates were open the entire time. They were opened by the Sanitary District in October during the heavy rains and high tides, to save the cost of running the pumps 24 hours a day, as this would have been necessary to prevent mosquito breeding, the minnows in the dike ditch in two areas not being numerous enough to take care of the situation. The samples collected since that time have, however, given us an opportunity to check as to whether or not sand fly breeding increases to any great extent in a diked marsh if it is allowed to flood in the fall during a rainy season and when the tides are high. From a total of 28 1-quart samples of soil collected from the undiked marsh, 357 sand fly larvae were isolated. From a total of 25 1-quart samples of soil from the diked marsh, 14 sand fly larvae were isolated. From 18 1-quart samples collected from points previously sampled, 1 sand fly larva was isolated. This is approximately the same larval population shown by soil samples as was found prior to the flooding of the marsh and indicates that it may be possible to allow the diked marshes to flood during the heavy-rain and high-tide season in the fall without increasing the sand fly population. This would save considerable pumping, which decreases the cost of a diking control project.

Buffalo gnat outbreaks may be affected by flood-control project.--During the last week in November, W. V. King and G. H. Bradley visited the Sardis dam and reservoir site near Sardis, Miss. This is a flood-control project on the Little Tallahatchie River and will be completed in time for water storage this winter. We were told that the reservoir has sufficient capacity to control completely the floods on this river and to have some effect on the confluent rivers in the upper Yazoo Valley. The impoundment may therefore be of considerable benefit from the standpoint of *Simulium* outbreaks. Observations were also made in the reservoir area of the work being done to reduce future anopheline breeding. This consists principally of the complete clearing of the lower portions of the area, with supplemental marginal drainage of depressions.

FOREIGN PARASITE INTRODUCTION

European parasite laboratory closed.--Owing to war conditions in Europe, it has been found necessary to close the laboratory at St. Cloud, France, for an indefinite period. This laboratory was originally established at Hyeres, on the Mediterranean coast, in 1924, under the direction of W. R. Thompson, for the study of the European corn borer and its parasites. H. L. Parker became head of the laboratory in 1928, and has served i that capacity ever since. In 1934 the laboratory was transferred to the newly organized Division of Foreign Parasite Introduction and thereafter conducted all of the Bureau's work on parasite problems in the European and Mediterranean regions. Mr. Parker and P. A. Berry will leave in the near future to undertake similar work on a series of problems in South America, and H. D. Smith has been assigned to the receiving station at Moorestown, N. J.

FOREIGN PLANT QUARANTINES

Plant material handled at Washington, D. C., Inspection House.--During the month of October 240 lots, representing 1,145 containers of various kinds of plants, bulbs, and other material, exclusive of mail shipments, passed through the Washington, D. C., Inspection House. Some form of treatment was given to the plant material in 791 containers as a condition of entry and 354 were released after inspection, without treatment. This represents a very considerable increase over October 1938, when similar importations consisted of 409 containers, 241 of which were treated as a condition of entry.

A locked auto trunk.--A local resident returning from Mexico assured the plant-quarantine inspector at Brownsville, Tex., that she had no flowers and had no key to the locked trunk on her car, but ultimately he obtained the bunch of keys hanging from the ignition key and found 300 chrysanthemums and 2 floral wreaths in the trunk. The flowers were heavily infested with thrips and 8 other kinds of insects were found, including 2 kinds of chrysomelids, 1 cicadellid, 2 aphids, 3 larvae of *Homoeosoma* sp., 1 neuropterous larva, several geometrid larvae, and 1 mirid, apparently *Lygus apicalis* Fieb. An administrative fine of $5 was assessed by the customs inspector.

Entomological interceptions of interest.--A living larva of the Mexican fruitfly (*Anastrepha ludens* Loew) was intercepted at Laredo, Tex., on September 10, 1939, in a peach in baggage from Mexico. A living adult of the chrysomelid *Diabrotica speciosa* (Germ.) was taken at New York on March 30, 1939, on packing for plums in cargo from Argentina. A living larva of the pyralidid *Myelois venipars* Dyar was found at Hidalgo, Tex., on July 6, 1939, in an orange in baggage from Mexico. Living specimens of the cicadellid *Eupteryx melissae* Curt. arrived at Philadelphia on July 28, 1939, on the cut stems and leaves of sage in the mail from England. Specimens of the scale insect *Aspidiotus fabernii* Houser were taken at the airport at Miami, Fla., on July 16, 1939, on an unknown plant in baggage from Cuba. A living adult of the chrysomelid *Calligrapha diversa* (Stal) was intercepted at San Francisco on March 20, 1939, on orchid plants in the mail from Mexico. A living specimen of the pink bollworm (*Pectinophora gossypiella* Saund.) was found at Brownsville, Tex., on August 21, 1939, in okra in baggage from Mexico. A living specimen of the lygaeid *Cryphula fasciata* (Dist.) arrived at Galveston, Tex., on August 3, 1939, on banana debris in cargo from Guatemala. Living specimens of the scale insect *Chionaspis humilis* Brain were taken at Washington, D. C., on June 10, 1939, on a plant (*Haworthia*) in the mail from Southwest Africa. Three living larvae of the West Indian sweetpotato weevil (*Euscepes postfasciatus* Fairm.) were intercepted at Norfolk, Va., on July 19, 1939, in a sweetpotato in ship's stores from Dominican Republic.

Pathological interceptions of interest.--*Aphelenchoides parietinus* Bast. and *Aphelenchus avenae* Bast. were intercepted on November 16 at New York in *Fritillaria imperialis* bulbs from Holland. *Aspergillus alliaceus* Thom and Church was intercepted at New York on November 24 on cipollino bulbs from Morocco. *Claviceps paspali* Stevens and Hall was intercepted at New York on November 16 in paspalum seed from Colombia. *Coryneum foliicolum* Fckl. and *Gloeosporium fructigenum* Berk. were intercepted November 2 at New York on pears in airplane baggage from France, *Kuehneola malvicola* (Speg.) Arthur was intercepted on *Hibiscus syriacus* from Mexico on June 24 at Brownsville. *Leptothyrium rubi* Sacc. was found February 2 and April 19 at New York on *Rubus* leaves in stores from France. *Mycosphaerella lythracearum* Wolf was intercepted at New York on October 24 on pomegranates from Puerto Rico. *Peronospora trifoliorum* de Bary was intercepted at El Paso on October 25 on alfalfa from Mexico. *Septoria dianthi* Desm. was intercepted on November 9 at New York on a carnation plant from Italy and on carnation cuttings from Italy on November 23. *Septoria malvicola* Ell. and Mart. was intercepted on July 1 at New York on leaves of *Malva rotundifolia* in mail from Rumania. *Septoria organicola* var. *majoranae* Bres. leaf spot was intercepted on marjoram leaves from Canada at Blaine on July 14. The determination was tentative since no authentic material is available in the Department's collections for comparison. *Uredinopsis macrosperma* (Cooke) Magn. was the tentative determination for a rust found on November 1, at Brownsville on *Pteridium aquilinum* (fern) in baggage from Mexico.

DOMESTIC PLANT QUARANTINES

Survey of infestations of new alfalfa weevil.--Scouting for the new species of alfalfa weevil, *Hypera brunneipennis* Boh., in Yuma County, Ariz., and vicinity, was begun in December, under the direction of W. E. Dove and in the direct charge of H. T. Rainwater, both of the grasshopper control project. A headquarters office is being established at Yuma.

Fall-grasshopper-survey indications.--Data on probable infestations of grasshoppers in 1940, as indicated by the recent fall survey of egg beds and by observation of adult infestations, have been completed. In States where the indications are that infestations will be light in 1940 the bait estimates, as calculated from survey data, were mailed to State leaders, requesting their approval or suggestions for reasons for raising or lowering bait estimates in specific counties or areas. In States where heavy grasshopper populations are expected in 1940, the State leaders attended meetings with the project leader and other Federal agents, in the Minneapolis office, where the bait estimates were adjusted in accordance with records of previous bait uses, types of crops involved, weather, and other factors. The tentative bait estimates agreed upon are being reviewed in the Washington office before estimates are made final.

Grasshopper infestation in 1940 will be lighter.--The information derived from the recent fall grasshopper survey indicates that the need of control measures in 1940 will be less in extent than was the case in 1939, although heavy baiting requirements are expected in the northeastern and southwestern parts of the Great Plains area. The principal area for control of migratory species is in the north-central part of Montana, adjacent to the Canadian border, where grasshoppers that flew from the heavily infested portion of eastern Montana in 1939 concentrated. The egg-survey data indicated that *Dissosteira longipennis* Thos. is sufficiently numerous to necessitate organized control in 1940 only in New Mexico and in Colorado. Most of the egg beds of this species have been surveyed and marked and it is expected that, contingent on the appropriation of funds, control can be established early in the season with only a fraction of the amount of bait and expense involved in the 1939 campaign against this species. The survey also indicated an extension of infestation of *Melanoplus differentialis* Thos. as far north as some of the southern counties of North Dakota. In general, areas in North Dakota and Montana which were heavily infested with *M. mexicanus* Sauss. in 1939 have only normal or below-normal populations of the species remaining for the 1940 infestation. It is believed that areas heavily infested with *M. mexicanus* in 1940 will, in general, be in the more thickly populated, more intensively farmed districts, with the exception of areas in eastern Colorado, western Kansas, and the Oklahoma Panhandle, where this species seems to be increasing, constituting the possibility of reaching flight proportions in 1940.

Grasshopper control headquarters moved.--The moving of the office equipment and personnel of the grasshopper control headquarters from Minneapolis to Denver will be completed in December and it is expected that the Denver office will be opened on January 2.

Mormon cricket survey.--At the conclusion of the 1939 Mormon cricket control season and at the time of egg laying, a survey to determine the extent of adult cricket infestation was conducted. In the adult survey, supervisors plotted on county maps the location and extent of bands of crickets at the time of egg laying, and classified the bands, according to uniform methods, as heavy, moderate, or light. In each area so determined to be moderately or heavily infested, egg samples were collected somewhat later in the season, and data as to the probable concentration of the 1940 hatch were obtained by determining the density of egg deposition. Data in each State have been obtained for both heavy and moderate infestations within 5 miles of agricultural lands, and for heavy, moderate, and light infestations on both range and agricultural lands. It was determined that the infestations in the fall amounted to 2,145,765 acres of heavily and moderately infested land within 5 miles of agricultural lands, as compared with 4,298,788 acres in the fall of 1938. The total number of acres lightly infested in 1939 was 10,507,365, a slight increase over that reported in 1938. Results of the adult survey indicate that there has been a considerable decrease in infested areas in northern Wyoming and southern Montana, and an increase in infested areas in northern Nevada, southwestern and western Idaho, and in Oregon.

White-fringed beetle control work in November.--Because of the scarcity of white-fringed beetles in all of the areas, little inspection activity was carried on in November. A few live beetles are still being found, however, in southern Mississippi and at New Orleans. A survey unit was recently set up to determine the larval population existing in December in the various areas. Infested properties and land adjacent to infestations in Pensacola, Fla., and Mobile and Florala, Ala., are being cleared by W. P. A. workers in preparation for the 1940 control work. In the New Orleans area owners of nurseries and greenhouses are continuing with the construction of certified units for plunging nursery plants and there has been a continuous call for sterilized soil. A number of nurserymen and florists have disposed of uncertified plants in order to handle only certified plants that have been plunged in the approved unit. At Baton Rouge and New Orleans a large number of azaleas and camellias were recently fumigated with methyl bromide solution, in accordance with regulatory instructions.

White-fringed-beetle-control program for 1940.--At a conference held on November 1 and 2, at Pensacola, Fla., attended by representatives of this Bureau and of cooperating States, a tentative program for control and eradication of the white-fringed beetle was discussed. The aim for 1940 is to develop cropping programs with farmers in infested areas, thus permitting clean-culture operations during June, July, and August. On properties for which releases are not obtained and on which the planting of small grains is not practicable, crops which lend themselves to the application of control measures are recommended.

Phony peach and peach mosaic disease control.--The former limiting restriction on the use of emergency-relief funds allotted to the Bureau for phony peach and peach mosaic control, to the effect that no work is to be performed in commercial orchards and nurseries, has been lifted, and the tree-removal work was thereby increased in November. In Georgia 28,000 phony trees are being rapidly removed by such labor and many blocks of abandoned peach trees are being taken from the orchards in the infected area of Colorado.

Sweetpotato weevil control work.--During the month of November, inspections for sweetpotato weevil were made of seedbeds, fields, and storage places on 2,830 properties in Alabama, Georgia, Mississippi, and Texas. Eradication measures were continued in Baldwin and Mobile Counties, Ala., Thomas, Camden, and Glynn Counties, Ga., Pike, Walthall, Marion, Lawrence, Jefferson Davis, Jones, Covington, Stone, and Pearl River Counties, Miss., and Gregg, Shelby, Nacogdoches, and Cherokee Counties, Tex. Eighty new infestations were found. No weevils could be found in Gregg and Shelby Counties, Tex., and it now appears that the infestations in these counties are approaching eradication.

Citrus canker eradication.--The reworking of old infected properties in Harris and Jefferson Counties, Tex., was resumed in November. Most of the citrus trees found in the city of Houston are dooryard trees of satsumas, kumquats, lemons, grapefruit, and orange seedlings, and occasional small groves of satsumas. Hedges of Citrus trifoliata are used either for fences or for ornamental purposes. In the more exclusive residential districts, such hedges are used in the landscape plans of the estates and in such cases it is very difficult to obtain permission to destroy them. The citizens as a whole, however, are very cooperative.

Pittsburgh inspectors intercept shipment containing larvae of Japanese beetle and rose chafer.--In the inspection of an uncertified shipment of two trees shipped by a commercial consignor near Baltimore to a point outside the Japanese beetle area, transit inspectors at Pittsburgh, on making an examination to determine the character of the packing, found that one of the trees was packed in soil infested with two larvae of Popillia japonica Newm. and four larvae of Macrodactylus subspinosus (Fab.). The interception was made on October 10 by John T. Bigham.

Quarantine infringements reported.--During November transit inspectors reported 167 infringements of domestic Federal quarantines, including 2 violations of the white-fringed beetle quarantine--1 being intercepted at Atlanta and the other at New York. Japanese beetle inspectors are being assigned to assist in quarantine enforcement at Philadelphia, Pittsburgh, New York, and Boston during the Christmas shipping season.

CONTROL INVESTIGATIONS

Buffer capacity of the hemolymph of Prodenia eridania.--The buffer capacity of the blood of the southern armyworm (P. eridania Cram.) has been determined in the Beltsville, Md., laboratories by Frank H. Babers. The blood is well buffered, having a buffer capacity of 0.022 at pH 6.65, as compared with the value 0.0228 at pH 7.4 for human serum. The pH of the blood of larvae kept overnight at room temperature, in an atmosphere saturated with nicotine vapor, did not change. It is thought that the buffering power of the blood is due to the presence of carbonates, bicarbonates, phosphates, amino acids, urates, and salts of the proteins.

INSECTICIDE INVESTIGATIONS

Nobel prize in chemistry awarded former workers on rotenone and pyrethrins.--The Nobel prize in chemistry for 1939 has been divided between Professor Adolf Butenandt, director of the Kaiser Wilhelm Institute for Biochemistry at Berlin-Dahlem, and Professor Leopold Ruzicka, of the Technische Hochschule, Zurich, in recognition of their work on hormones. This announcement in Science of November 17, 1939, is of interest to entomologists as well as to chemists having to do with insecticides, because Dr. Butenandt was one of the early workers on the structure of rotenone and Dr. Ruzicka was the first to determine the structures of pyrethrins I and II, the active principles of pyrethrum flowers. It is of interest to know that F. B. LaForge, H. L. Haller, and Lloyd E. Smith, of this Division, were working on the structure of rotenone at the same time Dr. Butenandt was and the American workers were successful in solving this very difficult problem first. Messrs. LaForge and Haller have recently reinvestigated the structures of pyrethrins I and II and have slightly modified the findings of Dr. Ruzicka. A series of papers describing these researches is now being published.

New particle-size survey of sulfurs in progress.--A survey of average particle-diameters of powdered sulfurs produced commercially for insecticidal use is being made by E. L. Gooden. In this survey is employed a new apparatus (News Letter vol. VI, No. 9, p. 32) designed to indicate directly the surface-weighted average diameter of any sample, rather than its size distribution. This average diameter, being inversely proportional to specific surface, is one of the best indices to those properties of a powder which depend on fineness, and thus constitutes one of the simplest and most logical bases for comparison of samples with regard to particle size. Results accumulated to date (involving 35 samples) in the current sulfur survey show averages distributed almost continuously throughout the range from 5 to 28 microns. Incidentally, the surface-weighted average diameter, when expressed as here in microns, may be thought of (with certain theoretical provisions) as numerically equal to the actual volume in cubic centimeters of material required to cover a square meter of surface.

BEE CULTURE

Toxicity of insecticides to honeybee varies with concentration.--L. M. Bertholf, of Western Maryland College, has found in the cooperative study on the effect of insecticides on honeybees that, of two doses containing the same total amount of lead arsenate and calcium arsenate but varying in concentration, the one containing the more highly concentrated suspension is more toxic to honeybees than is the one containing the lesser concentration. He also reports that it seems probable that phenothiazine, in dosages covered by his observations, has no toxic effect that can be detected by the methods used, this in spite of the fact that the largest doses given were probably much larger than a bee would ordinarily get by sucking up a load of the regular spray mixture. He has further found that tartar emetic is toxic to bees and that median lethal dose lies between 12 and 24 micrograms per bee. This corresponds to about 4 to 8 micrograms of antimony.

Improvement found in stock under test in American foulbrood resistance study.--A. P. Sturtevant, of the Laramie, Wyo., laboratory, reports that during the summer 62 colonies were tested for their resistance to

American foulbrood by giving them sirup containing measured dosages of the causative organism, *Bacillus larvae*. Five additional colonies were tested by spraying their brood with material containing spores. Two strains stood out from the others in the tests but an F$_3$ generation of a strain that was considered one of the best last year gave the poorest record of indicated resistance of any stock tested this year. Another strain which in the F$_1$ generation gave only a fair record last year gave excellent results this year in the F$_2$ generation, apparently as a result of selective line-breeding. This year's generation of four other strains tested last year gave results quite similar to those previously obtained with these strains. There were apparently instances of hybrid matings in some of the stock used this year. Nervousness of bees and spotted nature of brood nests were again noted in strains that showed these characteristics last year.

Multiple matings of queen bees occur oftener than is popularly believed.--Although many competent observers have long reported the fact that queen bees mate more than once before beginning to lay eggs, this fact has never received common acceptance among beekeepers. Last year the occurrence of this pehnomenon was observed by Bureau workers both at Beltsville, Md., and at Baton Rouge, La. Observations at the latter place by E. Oertel last year and by Otto Mackensen and William C. Roberts this year indicate that this pehnomenon is of much commoner occurrence than has been suspected. Thus in a recent report of the work by Mackensen and Roberts it was stated that of 40 queens observed this year 19 mated twice and that perhaps 3 others could be placed in the same category although the evidence was not clear. The following additional data in regard to the 19 queens are quoted from this report: "Between their first and second matings, 2 made 1 flight and 1 made 2 flights. No flights were observed after the second matings. The average length of preliminary flights before mating was 9.7 minutes. The average length of first and second mating flights was 12.1 and 10.0 minutes, respectively. The average length of flights between matings was 7.2 minutes. In 17 cases the second mating took place on the day following the first, and in only 2 cases, S-76 and S-82, did it occur on the second day. Queen S-76 flew twice on the day between matings while queen S-82 did not fly. In the last case, the day was windy but queens were flying about as usual."

IDENTIFICATION AND CLASSIFICATION OF INSECTS

A significant addition to collection of coleopterous larvae.--Recently there has been added to the National Collection a larva of *Endecatomus reticulatus* (Hbst.). This, according to W. H. Anderson, is the first known larval representative of the tribe Endecatomini, family Bostrichidae. The adult beetles of this tribe are, apparently, rather divergent from the remainder of the family, so much so that E. A. Schwarz believed them wrongly placed. However, from the larva it appears that *Endecatomus* is a true bostrichid and should be considered intermediate between the Dinoderinae and the Psoinae.

The tropical bedbug in Florida.--Mrs. Thomas R. Brown, 330 Hayes St., Hollywood, Fla., submitted for identification a specimen of a bedbug which was determined by H. G. Barber as the tropical bedbug (*Cimex hemipterus* (F.)). Apparently this is the first notice of the appearance of this bug in the United States. It was described from South America and is now known to occur all over the warmer parts of the world. It probably reached Florida by way of the West Indies, where it is a common species.

Important addition to aphid collection.--An exceedingly valuable collection of aphids has been received from E. O. Essig, of the University of California, as a gift to the Bureau. This consists of slide-mounted material representing 117 species, mostly European, assembled in the course of Professor Essig's European visit 2 years ago. The entire lot can be considered authentically named, many of the items having been identified upon comparison with types in European collections. Included are also paratypes or cotypes of certain species described by Professor Essig. As the identity of a considerable number of the species has previously been unknown to us, owing to the lack of authoritatively determined material, the collection will be of appreciable assistance in the aphid identification work of the Division.

Consideration of problems in entomological nomenclature.--The frequency with which perplexing nomenclatorial problems are encountered in taxonomic work, and the need for some readily available review body, have led to the establishment of a committee within the Division of Insect Identification to consider difficult cases arising in the course of the Division's normal activities. The function of this committee is to review such problems thoroughly on the basis of the facts submitted and to interpret the application of the International Rules to the cases in question. It is recognized that in some cases the committee will undoubtedly be unable to render definite opinions that may safely be followed and will be forced to recommend submission to the International Commission of Zoological Nomenclature. However, most of the questions to be offered can probably be satisfactorily decided by this body, thus making unnecessary their reference to the International Commission and providing relatively promptly a basis for sound procedure. Various workers in other research divisions of the Bureau are doing more or less taxonomic work and no doubt are sometimes confronted with questions of nomenclature that are not easily decided because of lack of facilities or unfamiliarity with certain interpretations that have been published by the International Commission. If such workers care to submit problems of this kind to the Division of Insect Identification, the committee on nomenclature that has been set up in that unit will be glad to consider them and to recommend the procedure which, in its judgment, seems to represent correct interpretation of the International Rules.

---oOo---

UNIVERSITY OF FLORIDA
3 1262 09244 4933